

ture was so low as to render it incapable of igniting the free hydrogen issuing with it. After a few moments' heating, the tube was hermetically sealed. A liquid phosphorus was produced differing markedly from that obtained by boiling with caustic potash. It was very mobile, of a clear amber color, and on solidifying, assumed the tough, waxy state.

The physical peculiarities exhibited by the modification which we have studied seem fairly to entitle it to a place as one of the allotropic conditions of phosphorus. Indeed, they are much more strongly marked than those upon which the elastic variety of sulphur are based.

ABSTRACT OF THE REMARKS OF PROF. COPE AT THE
MEETING OF THE AMERICAN PHILOSOPHICAL
SOCIETY, JANUARY 16, 1874.

An analysis of the osteology of the extinct ruminant *Poëbrotherium* (Leidy), from the Miocene of the Western territories, determines some interesting relations to the living and extinct members of the order. The cervical vertebræ indicate affinity to the *Camelidæ*, and there is nothing in the remainder of the structure to contradict such relation. The separation of the *os trapezoides* is found in the camels, and very few others only among *Ruminantia*, but in the presence of the *trapezium*, *Poëbrotherium* shows relationships to more ancient types, as *Anoplotheriida*, &c. The reduction of the digits to two, and the separation of the metacarpals, point in the same direction; indeed, the number of carpals and metacarpals is precisely as in *Xiphodon*. But the mutual relations of these bones are quite different from what exists in that genus, and is rather that of the *Camelidæ* and other Ruminants, or what Kowalevsky has called the "adaptive type." This author has seen in the genus *Gelocus*, Aym., from the lowest Miocene or upper Eocene the ancestor of a number of the types of the order, but among these he does not include the *Camelidæ*. The present genus is a more generalized type than *Gelocus*, in its separate trapezoid and distinct metacarpals, and represents an early stage in the developmental history of that genus. It also presents affinity to an earlier type than the *Tragulidæ*, which sometimes have the divided metacarpals, but the trapezoides and magnum co-ossified. In fact, *Poëbrotherium* as direct ancestor of the camels, indicates that the existing *Ruminantia* were derived from three lines, represented by the genera *Gelocus* for the typical forms, *Poëbrotherium* for the camels, and *Hyaemoschus* for the *Tragulidæ*. The first of these genera cannot have been derived from the second, on account of the cameloid cervical vertebræ of the latter, and all three must be traced to the source whence were derived also the *Anoplotheriida*, perhaps the little known *Dichodontidæ*.

The two distinct metacarpals, separate trapezium and trapezoides, cameloid cervical vertebræ, and dentition characterize this type as a peculiar family, which may be called *Poëbrotheriida*. The genus from which it takes its name was originally referred by Leidy to the *Camelidæ*. The genera *Hypertragulus*, Cope; *Leptomeryx*, Leidy; and *Hypisodus* Cope, are probably *Tragulidæ*.